The Principle of Consistency: A Unified Framework for Classical, Quantum, and Relativistic Physics

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Abstract:

This paper proposes a novel framework to derive all known laws of physics from a single foundational principle: the *Law of Consistency*, introduced in Section 2 and elaborated in Section 7.

By applying this law to symmetric states and conditions—regardless of the method of execution—it becomes possible, through pure mathematical reasoning, to reconstruct both classical mechanics (as developed by Isaac Newton) and, more significantly, quantum mechanics.

Quantum mechanics is reinterpreted in this paper under a new conceptual framework rooted in consistency, providing coherent explanations for key phenomena such as entanglement, decoherence, wave function collapse, interference, the Pauli exclusion principle, and others.

The principle of consistency is also extended to the domain of special relativity and shown to underlie its transition into general relativity. Some well-known equations (e.g., *E = mc²*) are re-derived, not for novelty, but to emphasize their foundational basis in the proposed axioms of consistency (Axioms 1 and 2) and logical deduction.

 Constants of nature (e.g., Planck's constant, *G*, *k*, etc.) are not addressed in this work. It is argued that they may represent arbitrarily assigned values within the universe, preserved through space and time by definition and by the consistency law.

Finally, the paper proposes a *testable hypothesis* suggesting that quantum mechanics arises from interaction, and also provides a formulation to determine the *reaction force during collisions* between two objects at a given speed.
This paper suggests, for quantum mechanics, a testable way to prove that quantum mechanics is due to interaction.
Also, this paper offers a formulation to use for determining the reaction of contact when two objects collide at a certain speed.

keywords :

- Law of Consistency

- Fundamental Physics

- Classical Mechanics

- Quantum Mechanics

- Superposition

- Symmetry

- Linearity

- Newtonian Mechanics

- Electromagnetism

- Relativity

- Physical Interactions

- Unified Theory

- Cause and Effect

- Scaling Laws

- Derivation of Physical Laws

1. Introduction

Complex theories and analytical models in physics have been developed to describe and predict the outcomes of experimental observations. Quantum physics and relativity, in particular, have yielded some of the most accurate predictions in science.

However, there remains a need to understand the *underlying cause* of these phenomena and to unify the different fields of physics under a common framework. A clearer understanding of what fundamentally governs reality could lead to the discovery of new physical laws—even before they are observed experimentally.

This motivation led me to write this paper and propose a unifying principle: the *Law of Consistency*, which aims to explain significant aspects of physics across both classical and quantum domains.

Certain elements of quantum mechanics and relativity still lack a complete scientific explanation. This paper seeks to address those gaps by offering clear and simple answers through the lens of consistency and its logical implications.

Furthermore, this paper proposes a deterministic framework that aligns with the probabilistic outcomes of quantum mechanics without invoking randomness or collapse. While it shares surface similarities with the Many-Worlds Interpretation, it introduces objective constants—such as the cosine correlation in Bell-type scenarios—and mechanism of evolution/entanglement derived from consistency rather than branching or subjective observation. This may provide a more grounded physical basis for phenomena typically left to interpretation.

### Definition:

the theory says the following two axioms:

1. Indistinguishable circumstances must yield identical outcomes.
2. Indistinguishable physical process attributable to two or more different abstract scenarios, can benefit from the simultaneous application of the implication of each.

Consequences:

Consistency ensures that, out of the infinite range of all absolute possibilities, reality evolves in a coherent direction rather than in pure randomness.

When *n* distinct causes (denoted A_1, A_2, ..., A_n) individually produce effects $f(A_i)$ on an object D, their combined influence can be understood as indistinguishable from a single simultaneous cause, C, acting over a time interval *t*. This cause C represents the effect resulting from a consistent, infinite-frequency alternation of the A_i causes (i.e., A_1, A_2, ..., A_n, A_1, A_2, ..., A_n, ...).

e.g if n=2(similar thing applies for n)
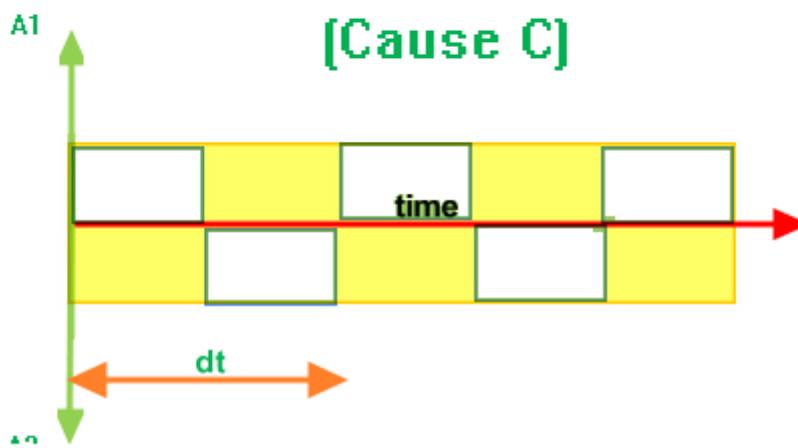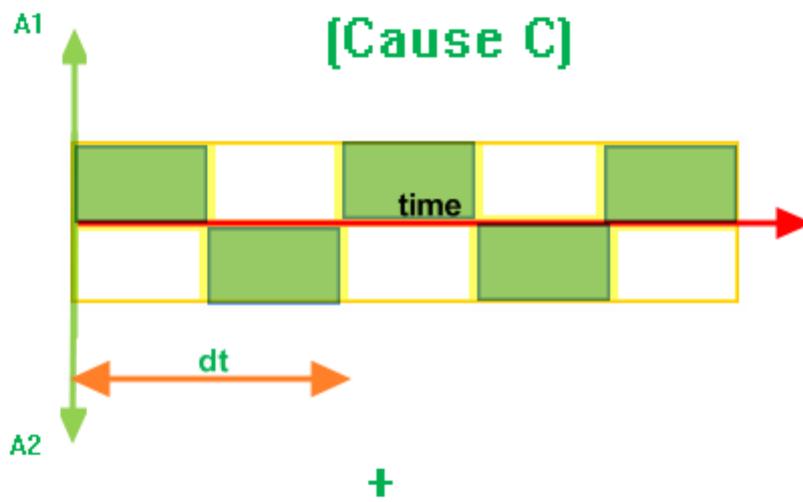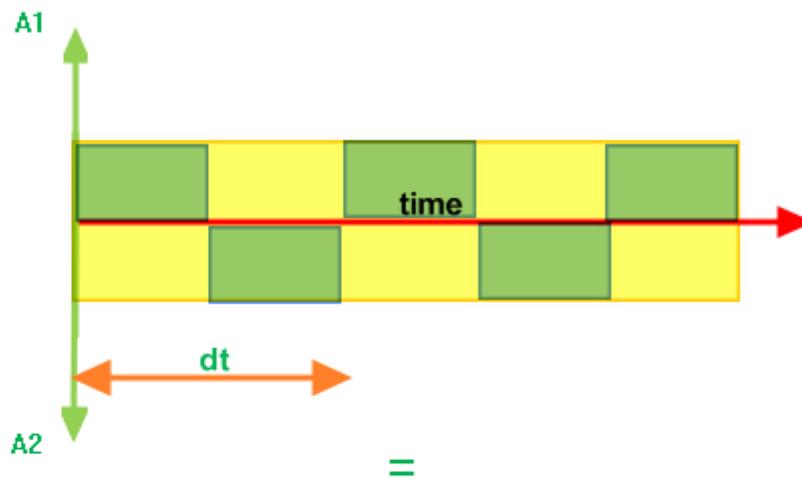
Thus, all causes A_i can be combined into a single equivalent cause C, repeated *n* times.

The amplitude of each cause's effect depends on the amplitude of the individual A_i. Now consider an isolated system containing only the causes A_i and the object D, with D located at the center of the system (distance zero from the origin).

If we scale the entire system by a factor of $\sqrt[3]{n}$, then the total quantity of causes contributing to C is multiplied by *n*—i.e., we now have *n* times the original cause C. The effect on D is then represented by $f(n \cdot C)$.

Scaling the entire universe is indistinguishable from observing a universe at a fixed scale. Therefore, by *Consistency Axiom 2*, any transformation that preserves indistinguishability must also preserve relative trajectories and physical effects. This guarantees that effects which are linear with respect to length (e.g., motion) scale proportionally with *n*. Hence:

$f(n \cdot C) = n \cdot f(C)$

Therefore, the effect of the superposition of A_i causes is:

$f(\Sigma A_i) = f(n \cdot C) = n \cdot f(C) = \Sigma f(A_i)$ (since $dt = t/n$)

This shows that *motion effects can be linearly added*. Moreover, the direction of the total effect is aligned with the *vectorial sum* of all individual effects $f(A_i)$.

Additionally, as will be detailed in the next section, a cause influencing the position of an object cannot result in unidirectional motion if such motion violates the system's initial symmetry. In such cases, the object must either:

1. Move in multiple directions simultaneously (i.e., be in many positions at once), which will be shown to correspond to *quantum behavior*, or

2. Move along the unique, symmetry-preserving direction: the axis connecting the source and the affected object.

For example, two identical objects in a closed system exhibit symmetry about the midpoint of the line joining them. Any valid transformation must preserve this symmetry. The only possible result, while conserving the number of objects and satisfying symmetry, is motion in *opposite directions along the connecting line*.

Otherwise multidirectional copies should emerge from the object under irreducible state of superposed vectors of motion.

This *multidirectional behavior* converges to *classical unidirectional motion* at macroscopic scales, as we will demonstrate in Section 5 on quantum mechanics.

Given that the position-related effect of a cause corresponds to a motion vector along the direction connecting the object and the source, and that these effects are *linearly superposable*, we can represent each effect by a vector *U*.

In the next section, we will explore how the implications of consistency and the vectorial nature of effects form the foundation for all of physics.
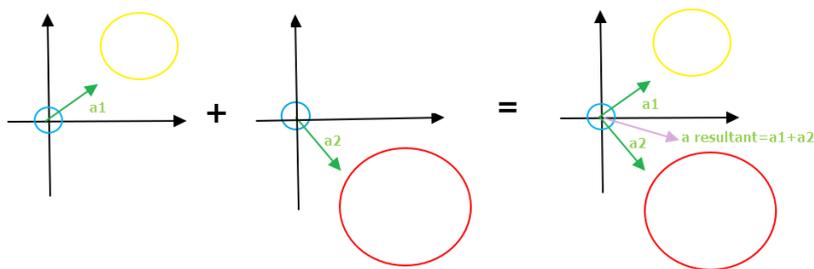
Additional remark:

"Can we consider the superposition by alternation of different particles as equivalent to the system's state evolution under the simultaneous presence of those particles?".
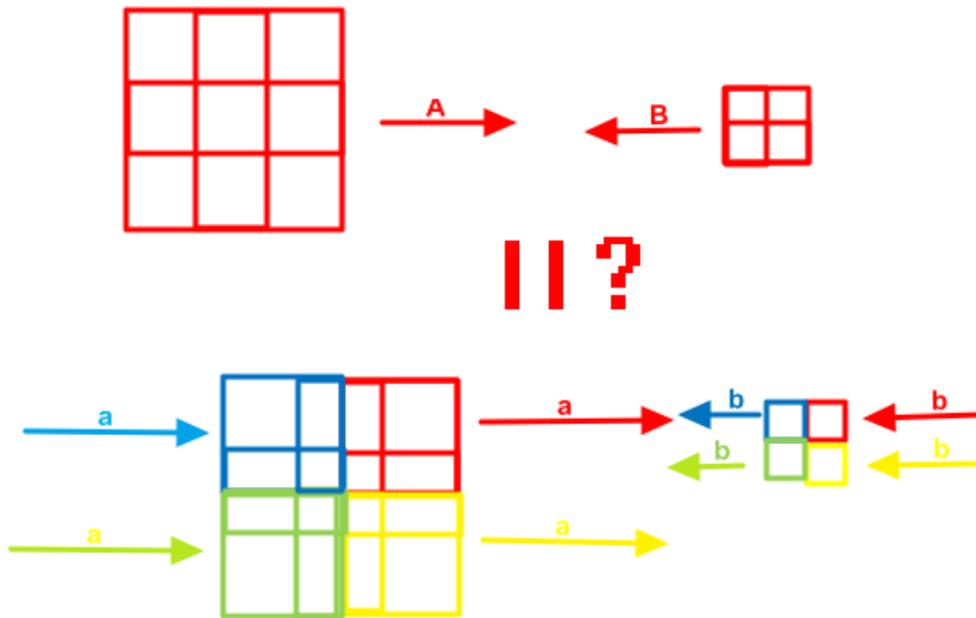
For e.g, the elements are divided into 4 superpositions
of yellow, red, green, and blue, each case isolated from the other colors.
is the equivalence between the infinite frequency alternation effect and
simultaneity still valid through some function?
If we study motion b of red at right, we have ¾ the alternation total time
spent without it which make the effect of the left cube indeterminate on
the right red cube, which make scaling impossible as we did in the
previous section. The difference is that previously we took an object X
and summed the effects $f_i(x)$ of each case with zero effect from the
others and therefore applied zero effect on X. However, in the second
approach, we are having times in the alternation process where there is
no X at all, and that can't be taken into account while studying X.because
the case of absence of X cannot have a determined effect on X.
Thus superposition to be applicable on object X, X must be present over
all alternations.

2. The Newtonian Mechanics

"The purpose of this section is to continue the development of Newtonian mechanics, primarily by deriving the principle of energy conservation, and to establish a conceptual structure upon which quantum and relativistic physics will later be built."

3.1-Law of Gravitation:

"Assume there is an object A with a volume of 1 unit³ (u³), located at a distance of 1 unit (u) from another object B, which also has a volume of 1u³. Both objects are composed of the same material and are initially at rest."

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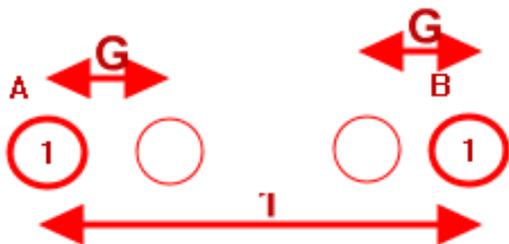
If A affect B, then also by indistinguishability B affects A in the same manner.which means the effect will be equal and opposite for the two.Lets assume that the effect can be written as G in unit length^n per time^m

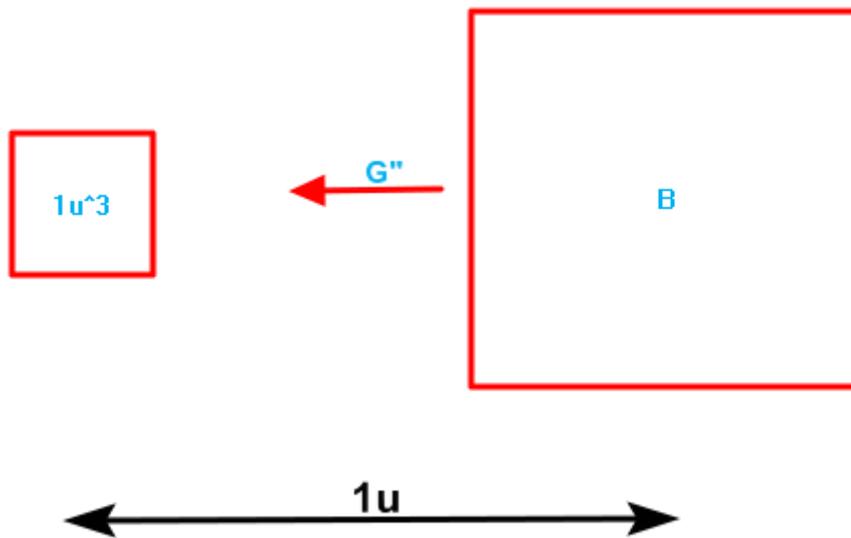if we have volume A and volume B of same material distant 1 u from each other:
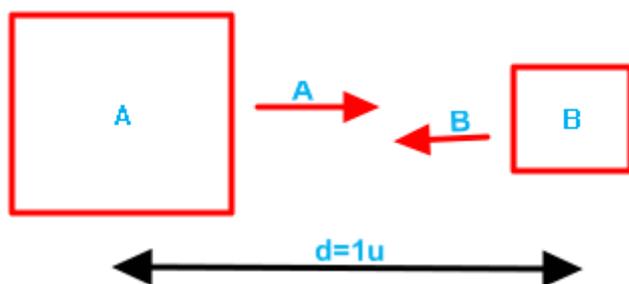
studying A,
A=f(<A>)=G'(1u^3,Va u^3, d=1u)

F(<A>)=Vb*G'(1u^3,Va u^3, d=1u)
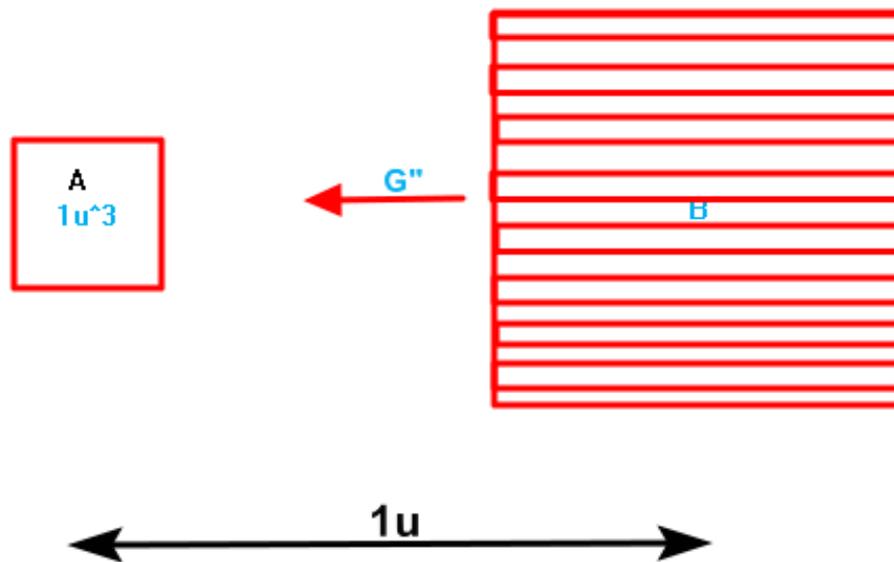similarly
F(<B>)=Va*G''(1u^3, Vb u^3,d=1u)

Now G' is as follows:

If we divide B into Vb cubes of 1u^3 each, being indistinguishable, they all are affected similarly by motion a=G"

If we take the slice at the axis joining the center of the original cubes,

The effect on that slice would be the effect due to A+effects of each other slice.

The slices being distributed symmetrically above and below the axis,

The vertical components would cancel out evenly, thus only the motion in horizontal would remain.
since we demonstrated previously that the effect should be aligned with centers of objects, it means the slices of object B,being done horizontally, relative to the center of mass, will have no effect.
which means the total effect of superposition on the slice will be the effect of A alone on the slice alone-->G"=G"(1u^3,1u^3,1u)=G

Which means:
F(<A>)=Vb*G
similarly
F(<B>)=Va*G

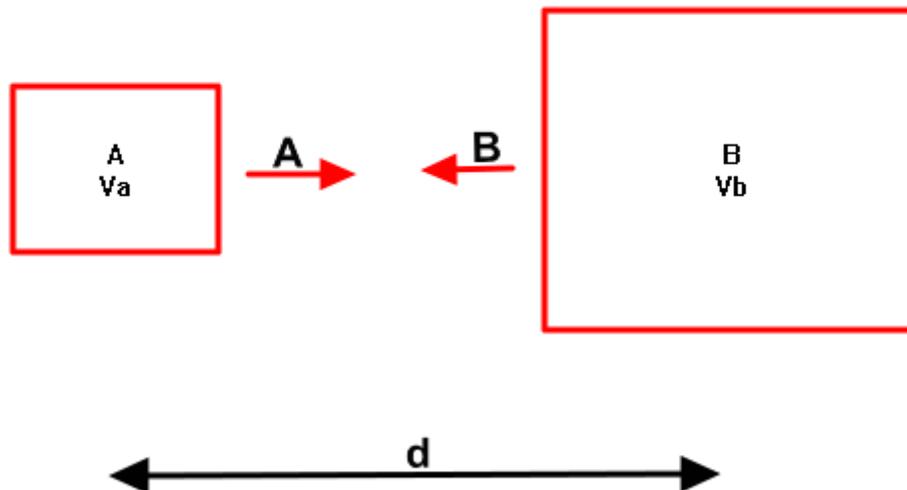**thus F(<A>)*Va=F(<B>)*Vb=Va*Vb*G (eq 1)**

This equation is valid for G and distance d=1
if d is different, we have:

We know that Va*A=Vb*B=Va*Vb*G'

G' is the motion of 1u^3 due to another 1 u^3 distant d≠1

Lets call It volumic force Fv=Va*Vb*G'; G' is in u^n/s^m

we take n=1; A and B would become linear, which permits easier linearity.
lets define mass M as the property that is equivalent to number of superposition of a volume applied simultaneously in effect of gravity.
in other words we have
G=G(Vsource,Vdestination,psource,pdestination,d) with p being the density of mass.
a=G(..)=Vb*G(1,1,ps,pd,d)=Vb*ps*G(1,1,1,pd,d)
we know that destination volume doesn't affect its acceleration
as G*(1,1,1,pd,1)=G(1,1,1,1,1)=G0

and by the definition of the property p, we can say G is independent of pd-->
a=Vb*pb*G(1,1,1,1,d)

now how to determine G(d) as function of G0:

the universe we live in, can be seen as evolving with constant scale, or also can be seen as evolving with an increasing scale(dimensions * scale), because in the latter, our body will be bigger and therefore any

dimension will be relatively the same.
this indistinguishability mean, according the law consistency, both point of views should be applicable with same output.
in other words we can say , if we had the following case:

A
Va

A →   ← B

B
Vb

← d →
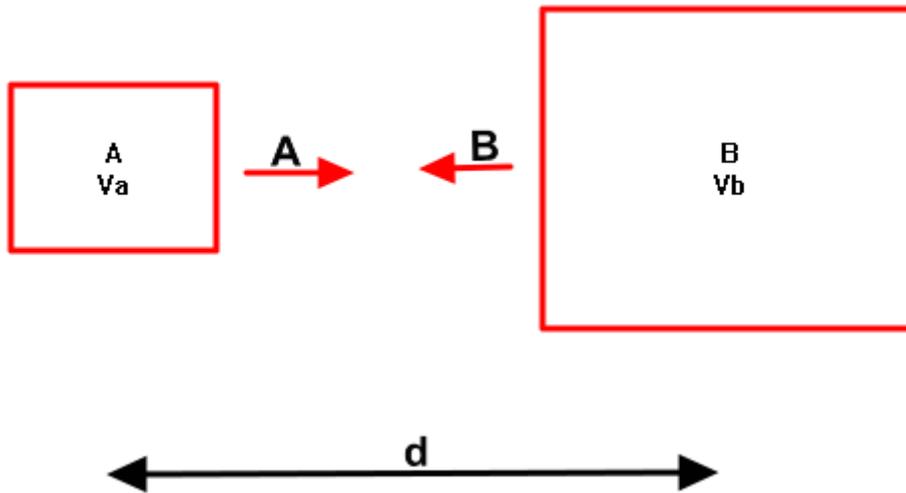
it is exactly the same as the system scaled 1/d
which is represented as follow

A
Va'

A' →   ← B'

B
Vb'

← 1 →
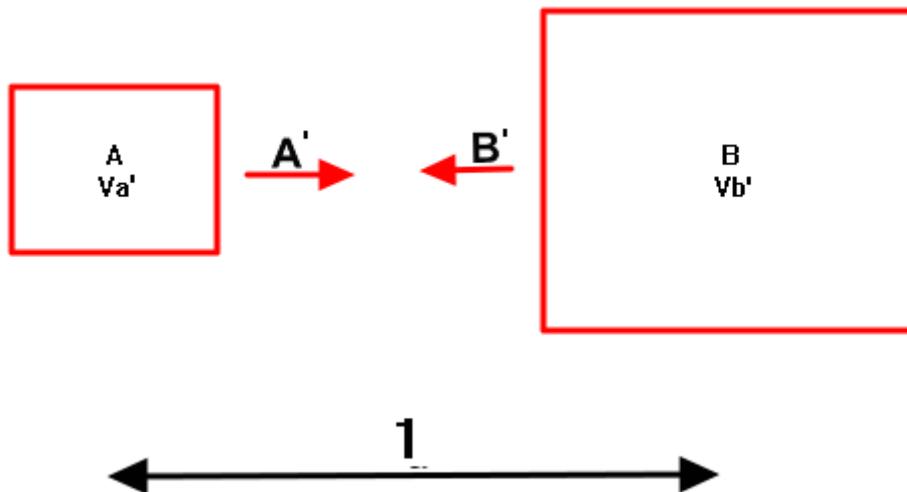
$A'=G0*Vb'=G0*Vb/d^3$
$A=A'*d-->A=G0*Vb/d^2$
$-->Va*A=G0*Va*Vb/d^2$
if they have different densities we can say
$Ma*A=Mb*b=\boxed{G0*Ma*Mb/d^2}$

3.2-Law of Electrostatic force:

Electromagnetism can be derived similarly, if we replace p. the mass density, with q the density of charge, however we get QaA=QbB instead of Ma*A=Mb*B, therefore
not equal opposite reactions, because then we get
A/B=Mb/Ma=Qb/Qa which make the charge mass dependent which is absurd by definition.
that's why a redefinition of "charge" have been done to conserve that 3rd law of newton which lead to conservation of momentum and energy as will be shown later.
Also, as general formula, K() might depend on the mass of the source and destination objects.
This means F=K(pa,pb,qa,qb,Va,Vb,d); q being the charge density, and p mass density.
A=Vb*K(pa,pb,qa,qb,1,1,1)/d^2 by analogy to the previous procedure used for gravity.
and B=Va*K(pb,pa,qb,qa,1,1,1)/d^2
by imposing the third law we obtain:
Ma*A=pa*Va*Vb*K(pa,pb,qa,qb,1,1,1)/d^2
Mb*B=pb*Vb*Va*K(pa,pb,qa,qb,1,1,1)/d^2

Now we define q as the property that makes action and reaction equal. Additionally, qsource increases acceleration linearly while qdestination does not affect acceleration(exactly as we did for density, thus similarly as the case of gravity but with the constraint of the action-reaction law)
thus K(pa,pb,qa,qb)=qa*K(pa,pb,1,1)
K(pb,pa,qb,qa)=qb*K(pb,pa,1,1)

Ma*A=pa*Va*Vb*qa*K(pa,pb,1,1)/d^2
Mb*B=pb*Vb*Va*qb*K(pb,pa,1,1)/d^2

Ma*A=Mb*B then:[(pa*qa)/(pb*qb)]=[K(pb,pa)/K(pa,pb)] which is absurd, meaning that the definition of q is impossible

lets consider qdestination increase acceleration linearly along with q

source, then
Ma*A=Ma*Vb*K(pa,pb,qa,qb,1,1,1)/d^2

   =pa*Va*Vb*qa*qb*K(pa,pb,1,1,1,1,1)/d^2
Mb*B=Mb*Va*qb*qa*K(pb,pa,1,1,1,1,1)/d^2

Ma*A =Mb*B get:

(pb/pa)=K(pa,pb)/K(pb,pa) which is an acceptable ratio(independent of charge densities q)
this relation of f(x,y)=(y/x)*f(y,x) have as solutions
the form

$$f(x,y) = Ax \cdot k(x) \cdot k(y) \quad \text{for any } k(x)$$

lets assume a third definition for charge, by choosing
f(x,y)=C*y*(1/y)*1/x=C/x
K(pa,pb)=A/pa

this leads to F=Ma*A=Mb*B=C*pa*Va*Vb*qa*qb*/pa
F=C*Qa*Qb/d^2

in other words we obtain $\boxed{\textbf{F=K*Q*Q'/r\textasciicircum 2}}$
the fundamental equation of electrostatic force.

The previous demonstrations are just to highlight that consistency and convention are behind the two laws of interaction: gravity and electrostatic.
convention affected the definition of charge(the way it is calculated in experiments) and the rest is automatic mathematical deduction.This helped maintain two proposition: F=m*a and ACTION=REACTION

3.3-Contact interaction, and indirect interaction:

So far we proved that law of consistency is enough by itself to describe the laws of direct interactions at a distance.
however if we shift from the ideal assumption of direct interaction to indirect,like forces mediated by particle/other object, the formula might change, especially if the particle/other object mediating have some property P≠0 which affect computations in the system and which lead to a more complex formula then F=F0/d^2.

we see that clearly in strong nuclear force interaction.
Briefly we will not enter to derivation of it in the paper.

We might say, why did gravity and electromagnetism work without mediation? and why we took that for granted?
you have the right to ask, the particle that mediates those two types of interaction are massless and chargeless, which makes it a valid assumption as it do not affect the system by definition and therefore can be ignored; however, why is that? general relativity and quantum mechanics answer that in quantum field theory, confirming the classical behaviour and the nature of force-carrying particles.

Contact interaction: is when two objects boundaries are in close approximation or even contact with each other.

we will simplify the procedure at the first attempt, and deal with rigid objects
rigid objects: are objects only divisible into parts that maintain distance in between as fixed.

deformable bodies:are objects that are not rigid.which means have a parts that do not maintain fixed distances with each other.

Assume we have a fundamental rigid body A, hits a fundamental rigid body B at a certain motion u/s^n.
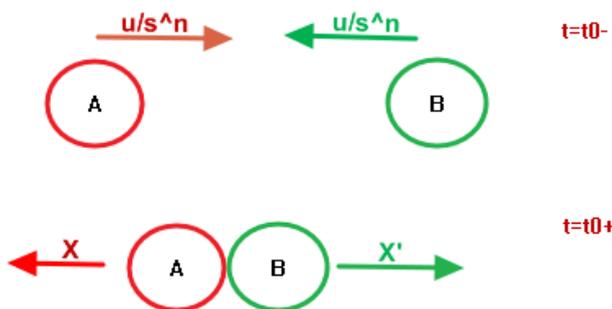
they collide on the rigid limits of each, and undergo a motion X for A and X' for B. If A and B where of the same properties then X=X'

Statement 1: Assuming B1 and B2 , of same properties and identical each to B, forming a rigid body B'=B1-B2
A hits B'; either on B1 or on B2,in both cases the motion of the center

is parallel to the motion of A prior collision.

Demonstration:
let's consider the case, A hits B1 (A hits B2 will be similar)
the only relative motion not resisted is rotation around B2
Also B1-B2 have the tendency of keeping the same distance.
these two phenomenon applies simultaneously, and as shown
previously by consistency law, the simultaneity is equivalent to
superposition of each effect individually.
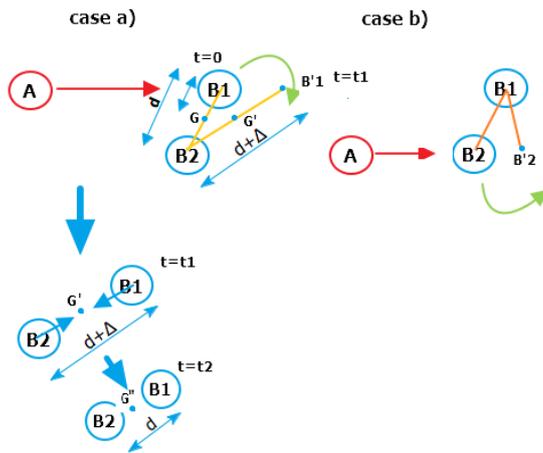
As seen in the picture, A moves B1 by amount X', the centroid
between B1 and B2 moves parallel to X' under the first effect,
and keep its position under the second---> in total the centroid moves
parallel to A.

let's assume this fact is correct for n particles, would it be correct for
n+1 particles?
if we consider A hits an object of n+1 particles, it is equivalent to A
hitting one particle B1 linked to n particles B2-B3-B4-…-BN+1; the
centroid of B2-B3-B4-…-BN+1 moves parallel to the line of action
by the assumption, and also B1 moves parallel to the line of action,
therefore the motion of centroid of B1-B2-B3-B4-…-BN+1 is parallel
to the line of action.
Thus we had proved by recurrence that whatever is the amount and
arrangement of particles, the centroid will always move in parallel
with the line of action of the repulsion(the repulsive acceleration

effect due to collision from A)

t=t0+

A

Bn+1

B1-B2-B3-B4...Bn
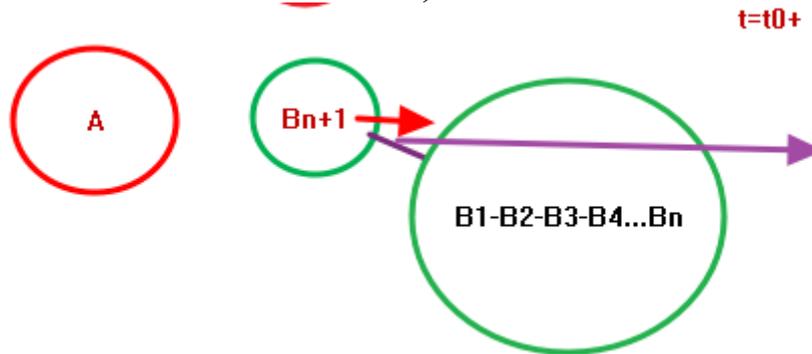
Statement 2: the final infinitesimal motion of A(m) divided by the final infinitesimal motion of B(n) is

uA / uB =(n/m)*(x/x');

m being the number of fundamental objects A that form A(m) and n being the number of fundamental objects B that form B(n).

demonstration:if object A hits particle B1 of object B1-B2 (object with two similar particles), the motion of the centroid, being in the middle would be half the motion of B1 according to the mathematical theorem of Thales,

therefore X'(G(B1-B2))=X'/2
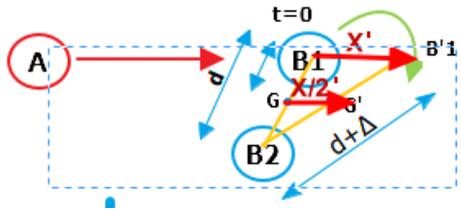
if object A hits particle B1 of object B1-B2-B3(object with three similar particles),
it is similar case as if we consider B2-B3 as one big particle BB2 and B1 being hatted by A.The difference is that the location of the centroid between centroid of BB2 and centroid of B1 will not be half way, but instead it will be at a distance d/3 from BB2.according to Thales the centroid will move X'/3.
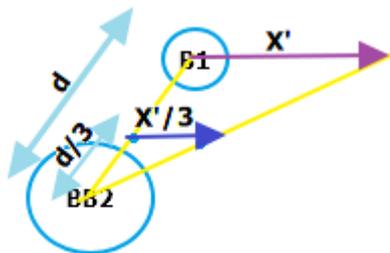
Likewise, if A hits particle B1 of object B1-B2-B3-….-BN(object with n particles), we consider B2-…BN are one object BB2 with centroid the same as the centroid of B2-…BN, the centroid of B1-B2-B3…-BN will be $\frac{\sum ni*di}{\sum ni}$; di being measured from the centroid of BB2, the centroid will be at d/n from BB2.
which means the centroid will move X'/n according to thalès.

if an object A(m) equivalent to m* objects A hitting B(m), it would be equivalent to superposition m times of A hitting B(m),
then Ub=m*X'(G(B(n)))= m*X'/n;
by symmetry we do the same for A, we obtain Ua=n*X/m
uA / uB =(n/m)*(X/X');
It is worth to note that the equivalency of A as A(m) was in context of the effect it generates, and not the geometry or any observable quantity.

Statement 3: Ma*Ua=Mb*Ub

we have after collision:
uA / uB =(n/m)*(X/X');

x and x' are fundamental motions defined as the motion of fundamental object A and B when colliding at initial relative motion u0

does the ratio Uj/Uk depend on u0?
if uA/uB=(n/m)*(x/x')*f(u0)   (1)
then we have also uB/uA=(m/n)*(x'/x)*f(u0)   (2)
(1)*(2)=1=f(u0)^2-->f(u0)=1, thus initial relative motion do not affect the ratio of resulting motion.

We conclude that uB/uA is still the same when u0=0 m/s^n

Therefore, if we take two planets A and B with mass Ma and Mb, under gravity resting on each other.
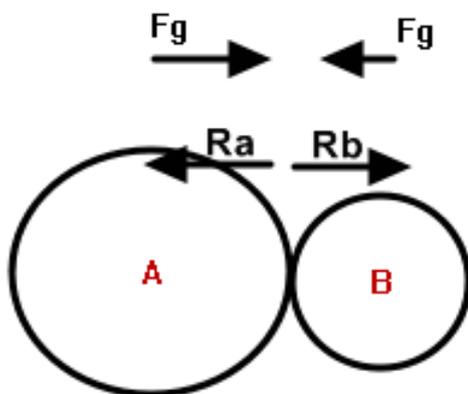
we have at equilibrium, Ra=Ma*uA; Rb=Mb*ub
we know that gravity Fg is equal on A and B.
if we take A alone, ΣF=Ma*aA=Ma*0=0
ΣF=Ra-Fg=0-->Ra=Fg,
ΣF=Fg-Rb=0-->Rb=Fg
==>Ra=Rb-->Ma*uA=Mb*ub and therefore
uB/uA=(m/n)*(x'/x)=Ma/Mb

we conclude that not only for distant interaction the Action-Reaction are equal but also for contact interaction which make the Action reaction law valid for all type of forces observed.

uA,uB are motion in u/s^m

Fg=Ma*Mb*G/d^2=Ma*A
thus A=Mb*G/d^2,

Yet we didn't specify A and G units.
if we assume first, A is displacement in meters,

And from superposition principle we know that the effect on an object under motion and gravity is = effect under motion+effect under gravity.

If we consider dG is the displacement done in dt seconds, and Vr(t) is the speed of the object at instant t due to motion of t-dt, and Vt(t) is the final velocity.
we know that x(t+dt)=x(t)+dG+v(t)*dt   (1)

dx(t)/dt=dG/dt+Vr(t)
Vt(t)=Vr(t+dt)=dG/dt+Vr(t)

But Vr(t)=dG/dt+Vr(t-dt)=dG/dt+dG/dy+Vr(t-2dt)=dG/dt+…..=(dG/dt)*t+V(0)

Thus we obtained that Vr(t)=(dG/dt)*t+v0
in case dG/dt is constant, which is our case as dG is due to the a temporal case of gravity effect separate from effect of motion.
lets call dG/dt=G0;
then if we derivate both term of (2) we get ar(t)=G0, thus G0 is an acceleration term.
the simplest form therefore of F=m*U cannot be less than order of 2,which means F=m*a.other derivatives are equally valid like F=m*j (jerk) etc.. but then G0 should be replaced by other constant value G0' as a higher order constant of motion.

so we obtained the three law of motions:
F=m*a; F=0-->v=cte
and Action=Reaction.

3. Quantum Mechanics:

In this section a re-interpretation of quantum mechanics is naturally deduced from the law of consistency.
we will show:

- How quantum mechanics arise naturally from law of consistency .
- The simplest resulting solution for the wave function collapse.and quantum evolution.
- The simplest resulting solution for entanglement without spooky action
- the derivation of Schrödinger equation.
- The simplest explanation of decoherence.
- Explaining quantization of energy, and Pauli exclusion principle derivation from law of consistency leading to chemistry laws
- $E=mc^2$ leads to quantum field theory including all types of particles and fields.

Derivation from consistency and wave-function collapse

In classical mechanics, when a body affect the position property of an other body, the body have to be affected in the direction that join both objects, to preserve symmetry with respect to midpoint,otherwise, the only solution would be that the outcome, due to whatever process acting on the system, will be multiple vectors for each body, so that symmetry is still conserved,leading to multiplication and copying of the bodies existing simultaneously

if attraction is in the dark direction, it have no cause to not be in the symetrical direction in blue
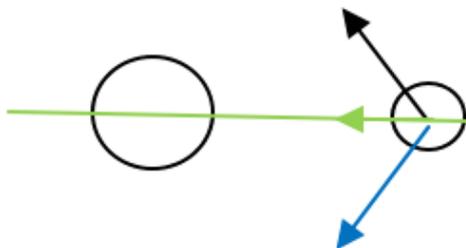
therefore we have under the law of order two solutions:
1) the object move aligned to the direction joining the two object(green)
2) the object become in two places at once

the solution number one happen to be that visible in classical mechanics. The solution number two happens to be of same type of that at the quantum scale which lead to the quantum/wave behavior of particles.

What happens in the most general way is this:

two objects influencing each other's position A and B.
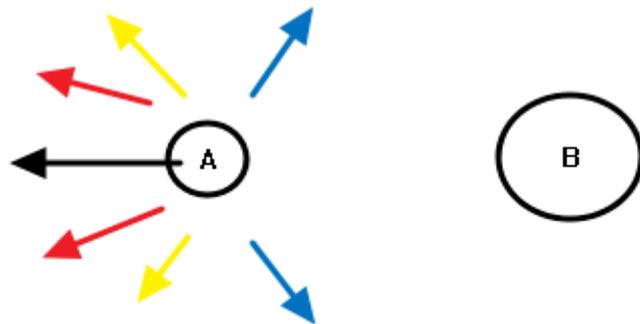
The effect, although multi directional and of multi intensities possible, is restrained by the law of consistency to have a symmetrical feature for all observable quantities around the axis that join A and B (for e.g the arrows that have same colors in figure 1.).
also it is restrained by the law of consistency as previously shown in classical mechanics ,so effects are still vectors that can be superposed linearly.

this being said, we know that A becomes in many places at once, according to each "acceleration effect" direction and intensity.

each new position of A is still affected by B thus leading to more A's and so on.
Now we have two solutions possible:
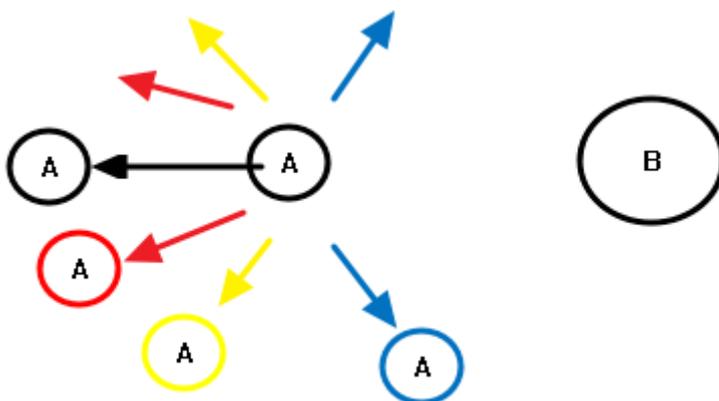
Either the different evolutions under the different effects will co-exist in physical world, or each will exist exclusively in a parallel world.

If A is a particle acting on B and identical to B the system is symetrical w.r.t midpoint of the distance [A-B] any function that respect law of consistency must also be symmetrical.regardless of the function details, it will act on A and B so that the output is symmetrical.if the output is a vector,as our case(acceleration) the vectors must therefore be colinear.(classical physics)

If the output was instead an exotic vector so that we could have many vectors as output, respect alll symmetries,but not be reducible to one vector,then would obtain a consistent phenomenon that might get us to a more general case.

1)However to not reduce exotic vectors to one single state, the state/exotic vectors must be non additive.this quality will preserve the distinguishability from classical mechanics

2)after instant 0 we cannot talk about additive of point 1 anyway.That due to multilocating,seperating the particle in many.(impossible to superpose)

Instant 0 is always present for single copy object.(before consecutive seperations) which mean addition of different exotic vectors of the same source will never happen

3)the copy outcomes identically to initial object are subject to the source in the exact manner.thus the object copying count increase.

4)the emerged objects might have influence on other objects.are those influences by any mean superposable?

The direct influence in a closed system

Suggest that only at time 0.

If Source object at 0+ create superposable vectors on a destination object the effect would be reduced to classical vector of motion, which is not the general case.

If instead not all vectors are superposable we must then obtain exotic vectors at the destination.to not be reducable to classical vector,those that are symmetrical vectors w.r.t axis joining source and destination

must not add together ,plus the output must still be symetrical overall.for all that to happen we must force

➜the unsuperposabity of symetrical vectors of same eigen state

Also vectors from same direct source cannot be added although from different eigen state by definition of the exotic vectors

=different eigen states of same source are not additive/superposable

Therefore,from n copies ,and C exotic vector for each we get minimum C!/n!

Therefore for the universe to be consistent n must strictly be < C;

C is constant always by consistency(universal constant)

 n(t+dt)=X*n(t)=C!/(n-1)!

n increase to infinity with time exceeding C which is absurd.therefore the only solution is that exotic vectors from same origin do not add up.

Therefore at each instant n(t+dt)=c*n(t)*^2

Solution

n(t)= (C)^(2^t - 1)

At enough amount of time it will converge to C^2^t which mathematically can be written as C'^t which is quite same as determined previously.

In both cases, when they emit any kind of signal, regardless of the method, indirectly or directly, each signal of each evolved position(each colored A),reach the brain.
under each signal the brain as an eigen effect of the same source,therefore independent,create new copies of the brain.so we get superposed copies of the brain, each as a reaction for each signal.
the effect of the signals cannot be added simultaneously on the same brain/same object like two effects in classical mechanics.

For e.g if v1 v2 v3 create red green blue sensation respectively. If the three comes from the same source you will measure one of them at a time and not a combination.

But if another source emit them identically in parallel no restriction on the addition seems necessary from points above.in fact contrarily to copies , originals must superpose as classical vectors.This was spared in the copy orders as one unit of copy effect is undefined

Because the two identical objects superposition of effects don't have to extend to two copiies superposition of effect which go through the whole evolution process.

Nonethless the vectors of effects are to be superposed as in classical mechanics.Now the question is, which eigen states of each source adds together?
Symmetry of the identical sources and the original destination, must be preserved regardless of the function that make them copies.
thus the outcomes must be symettriccal accordingly.This constaint forces that vectors of same eigen state only, be added together.
for e.g, 2 sources equidistant from the object A studied,
create C exotic vectors each, and all symmetrical w.r.t metiatrix of the sources.Must be superposable with symmetric outcome w.r.t mediatrix.This is only possible if the same eigenstates only , are added together.

This being said, we obtain numerous copies of the brain each for a particular evolution signal.
the question is then which one should I observe? Which brain am I associated to?
By consistency I must be associated to all of them simultaneously, but being a "one" person, and "one" awareness, and as this person is a dimension of the brain, I cannot be many persons at once and experience things from one person perspective as we do.thus nature have to take a solution.By indistinguishability of brain states, nature choose arbitrarily, in the most probabilistic sense, the brain its connected to. Leading to an observation of one outcome under name "wave function collapse"

To clarify, lets consider the double slit experiment: once the screen detector measures the particle , it is not the screen which collapse the wave function, rather the particle falls simultaneously on each location of the screen , and each give a signal for the detector for its location and each signal create a copy of the brain reacting to it, and then nature assign my consciousness to one of these brain showing

the particle falling in one place on the screen.

Now you might ask, why does it appear as entering one slit if detection is made between the slit and the screen?
For the interference part refer to decoherence section.
For the probabilistic wave part
the answer is fairly simple:
When the particle cross the slit and become far enough from the source that made it act as multi-locational, no more effect are on the particle, and therefore no more copies, including copies of the brain receiving signals.when the particle again hit the screen, it will send the signal to the same copy of the brain.
let me clarify further:
lets suppose A have at t0 one location and becomes under the influence of B from t0 to t1 seconds:
If not observed, from my point view all ways in orange are available for A to follow as possibilities.
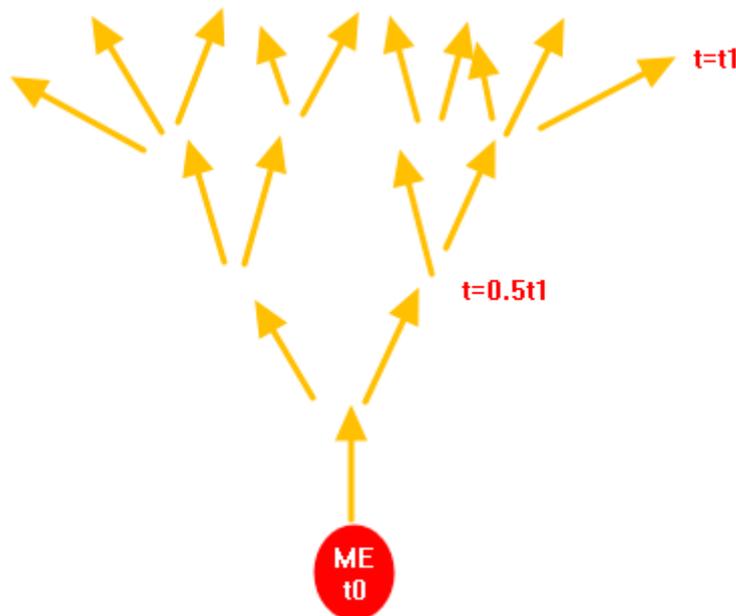
If I did a measurement at t=0.5t1 I would know the position on that moment.However, even if I do not do measurement anymore until t1, the object A's pathways have been narrowed to less than half the ones that were initially present because I am now located on a different branch by exlusion of black pathways:
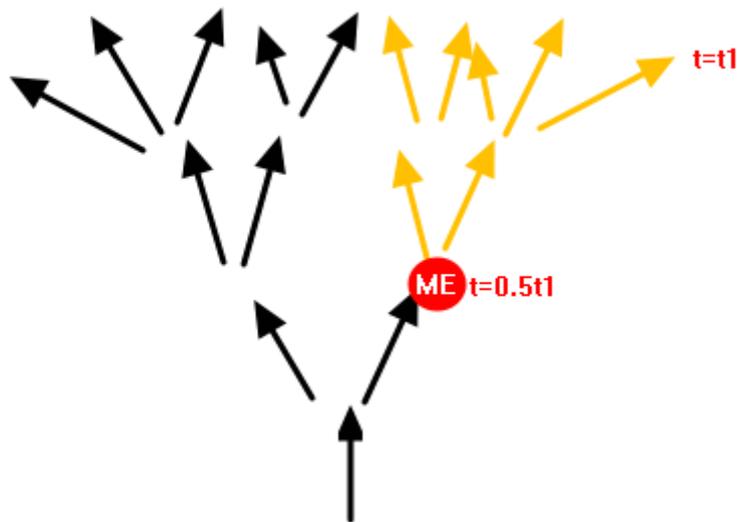
If we consider the influence stops at t1, and the measurement is done at t1 then the only remaining path is equivalent to classical(one arrow/one state)
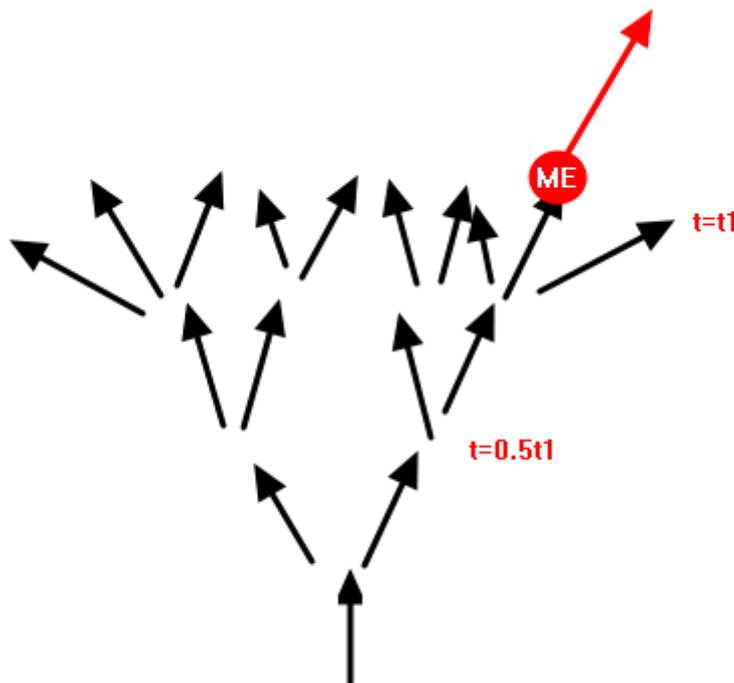
Now understanding this lets derive the most fundamental equation of quantum mechanics: Schrödinger equation.

From what we said previously, we know that:

1) in a system of two identical objects, A and B, by the mere symmetry they have, whatever the influence each has on another, being identical according to law of consistency, they must be the

same. Thus if A creates a field of acceleration effects on B, with each acceleration effect having its own weight of probability (as well as the symmetrical effects with respect to A-B) then an exact similar field of acceleration effect is created by B on A.
lets call each state under each acceleration effect as eigenstate.

When we look at the system as containing all states at once(as discussed earlier), and we want to know the total energy in whatever function that relates it to the eigen states, we have for each acceleration ai on A, a some eigen state of equal acceleration ai on B in same and opposite direction, regardless if they are interconnected states or not. Thus the sum of algebraic, as well as vectorial accelerations ai on A + B will be equal to zero
The same applies, as explained in section 3, for two non-identical objects A and B , but on term of force=m*a instead of acceleration effects.
we conclude that the sum of forces in the closed system is equal to zero
and we know a.ds=v.dv
which means

$$\int_{t1}^{t2} \sum F_i \, . \, ds = \int_{t1}^{t2} \sum M * v \, . \, dv = C$$
$$= \sum \frac{1}{2} M * v(t2)^2 - \frac{1}{2} M * v(t1)^2$$

The left term is equal to all work of interactions(mainly potentials) the second term equal the variation in kinetic energy of the system thus difference in kinetic energies of all eigenstates – the difference of potential energies+kinetic energies of all eigenstates, is zero.
conservation of total energy of the global state is thus demonstrated.

2) If we take the system of A alone and B alone, an eigen state of A ,or B, without going deep in which state of A can affect state of B in simultaneity and vise versa,
we still can know that for each eigen state of A with energy Eai=KE+PE evolving to E'ai, there is an eigen state of B with energy Ebi evolving to E'bi where A's and B's eigenstates under the same "force" influence(as previous case).
being under the same force influence, means that the "forces" of eigen state i on A+ "forces" of eigen state i on B=0

thus similarly to what derived previously in 1) $Eai'-Eai=Ebi-Eb'i=C$, which mean $Eai'+Eb'i- Eai -Ebi=0$
this means that $Ei(A)+Ei(B)$ is conserved.Thus if we are talking about system A-B, then the eigen state describing the system have a conserved energy-->$Ei=constante$

A recap of what I explained about wave function collapse:
no matter how many objects are involved in the system, each eigen
state of each object is reaching the brain that react to each
independently making the "superposition states" presented as copies
of brains.but once one consciousnes, which is the individual's
personal awarness, receive/comprehend the signal, it must happen in
one of the brain copies, thus collapsing superposition into one
outcome.
that one outcome concern all the system, because it is measurement of
all the system, directly or indirectly.
if an object is independent of all the other objects in the system, then
it is an isolated one and we do not gain any insight about his state by
knowing the others' states. thus it must be either measured
simultaneously with the other objects so that the collapse happen to
both, or it will remain undetermined.
when we look to such system, lets say A-B,
and we know that A can be in state A1,A2,A3….An
and B can be in the states B1,B2,B3,…..Bn
then if A independent of B, the states of the system (A-B)will be:
A1-B1;A2-B1;…..An-B1; A1-B2;A2-B2;…..An-B2 ……An-Bn
which actually make N:total number of states=n^2
and outcome will be $\psi_{A-B}=\psi_A*\psi_B$

When A and B interact with each other, they affect how much each
ψ_{A-B} is likely to be measured, and ψ_A becomes $\psi_{A/B}$(probability while
knowing state of B);

This is simply a kind of entanglement somehow.
And similarlily as in entanglement tests, when we measure B, then no
matter where is A and B and no matter how distance they became
from each other, if no external forces evolve any of them, the
outcome of A-B will be according to $\psi_{A/B}$, not due to spooky action,
but due to the fact they became mathematically correlated at near
distance due to interaction in the system they formed, and if kept
without external forces on any, they will remain correlated
mathematically, even if the distance becomes infinite without need for
more interaction. Because what is happening is that our localization
on the branches(see previous section) reduces the possible

configuration so that it seems of certain probability dependence.

Now, If we have a system of two identical objects A and A' forming a closed system, the objects before measurement being identical, the system A-A' is symmetrical with respect to center of A-A'
Therefore, according to law of consistency which forces laws of nature to apply symmetrically to the center of A-A' by indistinguishability, the outcome will be also symmetrical with respect to the center of A-A' .
that means the accelerations should be of exact amplitude, and the opposite direction of each other, which means that on measurement, they must collapse with motion symmetrical with respect to center of A-A' or in other word with equal and opposite values .
we will have that if $\psi_A=1$ for outcome i of A at measurement then $\psi_{A'}=\psi_{A'/A}=\psi_{A'}=1$.

That is simply is what entanglement is all about.
In Bell's experiment it is shown that this entanglement impose a shape of the probability distribution of each eigen state as function of θ with an expected value of $\cos \theta$ in Bell's experiment result.

In the framework of this theory, the correlations observed in Bell-type experiments are not evidence of "spooky action at a distance" but are rather the result of an underlying universal probability distribution governed by consistency. Specifically, the probability correlation between measurement outcomes on entangled particles follows a $\cos \theta$ dependence, where θ is the angle between measurement settings.

This $\cos \theta$ correlation emerges as a fundamental feature of interaction-induced entanglement and is treated here as a natural constant of the universe — specific to the type of force or interaction involved. The value is not derived from hidden variables or subjective processes such as consciousness, but rather is imposed by the requirement that all physical outcomes remain consistent under symmetry transformations.

By treating the probability weightings (e.g., $\cos \theta$ in the Bell setup) as constants preserved by consistency, the theory avoids speculative assumptions about the mechanism behind outcome selection. Whether or not the underlying process involves complexity or consciousness,

the effect is fully encoded in the constant itself. This approach provides a deterministic and local explanation for entanglement correlations, while preserving the appearance of probabilistic outcomes due to the coexistence of consistent copies or branches.

Derivation of the Schrodinger equation

What we got till now is that total energy of the system A-B is conserved. and the eigen state of the system A-B is also energy conserved. And we now will try to extend this energy conservation to determine Schrodinger equation.

lets consider $|\psi\rangle$ is a function in Hilbert space, and basically we want that $|\psi\rangle$ represent the superposition state of all acceleration effects of the system A-B including information about the system.

by knowledge that the quantum state is superposition of acceleration effects, and that different acceleration effects induced on an object , do not interact or combine with each other, then the outcome $j(\psi i)$ is independent of $j(\psi j)$ for all i,j. thus $d\,J(\psi j)/d\,J(\psi i)=0$
$-->(d\,j\,(\psi j)/d\psi j)*(d\psi j/d\psi i)*d\psi i/dj(\psi i)=0$
we know by the definition of j that $d\,j\,(\psi j)/d\psi j\neq0$ and $d\,j\,(\psi i)/d\psi i\neq0$

therefore the only solution for (1) is $(d\psi j/d\psi i)=0$
which means $|\psi i\rangle$ and $|\psi j\rangle$ are independent states
which means $\langle\psi j|\psi i\rangle=0$ for $i\neq j$;

thus we can represent as ψ as vector of Hilbert space $|\psi\rangle = \Sigma a i(t)*|\psi i\rangle$
what ever is the form of ψi , either complex number or not, it can be written as $\psi i(x,y,z,t)=bi(x,y,z,t)*e\string^if(x,y,z,t)$ with Ai and f as real functions. this means that $\langle\psi i|\psi i\rangle=||bi||\string^2=1$ if normalized.
$==> \langle\psi|\psi\rangle=\Sigma\,||ai||\string^2$

Now lets define expected energy as $E=\Sigma Ei*pi$, with pi being the probability of each Ei to be measured as outcome.
the probability comes from the fact that a acceleration effect is chosen arbitrarily at collapse as one of all the paths possible.It will respect geometrical symmetry, but acceleration effects with more "weighted" path are also possible, as equivalent to superposition of identical paths in comparision with other non symmetrical pathes. And this happens also respecting geometrical symmetry

also we defined the Hamiltonian $|\hat{H}|\psi i >= E_i * |\psi i >$

$==>< \psi i|\hat{H}|\psi i >= E_i$

Now we will see why setting the equation (1) below,we will have coefficients ai of $|\psi i >$ so that $ai^2 = p_i$ and will get conservation of expected energy in closed system:

$$<E>=\frac{<\psi|\hat{H}|\psi>}{(< \psi|\psi >)} \qquad (1)$$

According to model we built so far, on consistency solely we have the following:

lets assume a system of two identical objects A and B(although similar procedure can be applied for non -identical by transforming to a common equivalent)

we know that if A forces B to exist in many positions at once,we can give a number n for the number of different positions created.
at t=t0, n=n(t0)
at t0+dt, A and B would be in each new multi-locating position, under the influence of same force on greater distance.

t=t0+dt
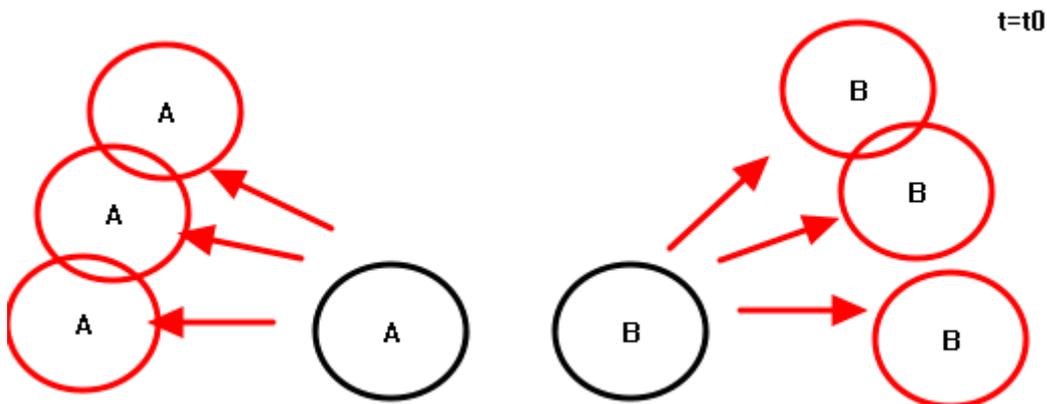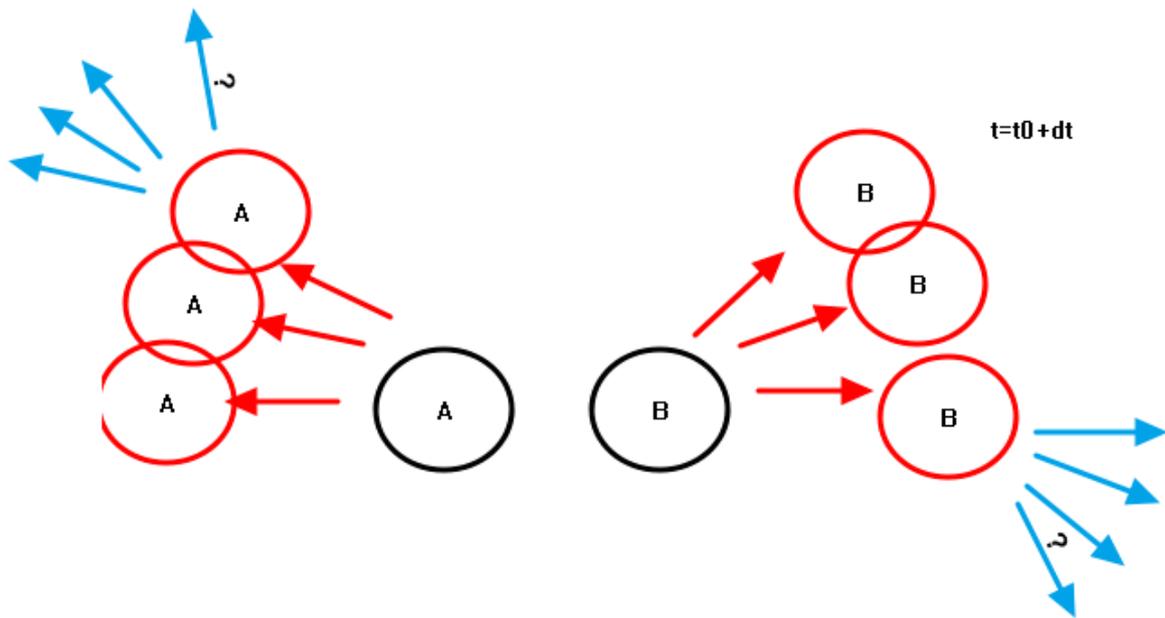
The effect of distance cannot be affecting the number of muli-locating positions, due to the same law of consistency applied on scaling and on scalable universe indinstiguishability(refer to force of at a distance)
In fact if the number of virtual positions per outcome increase with distance, it means there would violation of scalability as adding number of outcome cannot be crossed by scaling.It would be a totally different system.

This means that the number of total outcome at $N(t+dt)=N(t)*n(dt)$ with $n(dt)$ =constant regardless of distance$=C.dt=n0$;
$N*(t+dt)=N(t-dt)*C^2=N(0)*C^{(t+dt)}$
$N(0)$ is the classical mechanical number of multi-locating position$=1$
$==>N(t)=C^t$
the probability $pi(t)=Ai/N(t)$
Ai is the weight of each outcome, which is in this observation , by indistinguishability conserved
$-->pi(t)=Ai*C^{-t}$

This observation is not the only possible way to observe the situation. For example, we can instead think of the evolution, as hidden identical paths diverging due to some parameter, with a defined total number $N(t)=N=$constant, thus Ai becomes time dependent in such case.
In that observation we can still use pi(t) as it is being a unitless cosmological principle.

the expectation energy is thus$= \sum_{i=0}^{N} pi(t) * Ei = C^{-t} \sum_{i=0}^{N} Ai(t) * Ei$

$d<E>/dt = -\ln C * C^{-t} \sum_{i=0}^{N} Ai(t) * Ei + C^{-t} \sum_{i=0}^{N} \frac{dAi(t)}{dt} * Ei$ (1)

$$\sum_{i=0}^{N} pi(t) = \sum_{k=0}^{n} C^{-t} * Ai(t)^{-t}$$

Sum of probabilities is always =1 --> derivation is =0 ==>

Derivation with respect to time:

$$\sum_{i=0}^{N} \frac{dpi(t)}{dt} = 0 = \sum_{k=0}^{n} -\ln(C) * C^{-t} * Ai(t) + C^{-t} \sum_{i=0}^{N} \frac{dAi(t)}{dt} = 0$$

$$= C^{-t} \sum_{k=0}^{n} -\ln(C) \quad * Ai(t) + \frac{dAi(t)}{dt} = 0$$

C cannot be zero$==> \sum_{k=0}^{n} -\ln(C)^{\blacksquare} * Ai(t) + \frac{dAi(t)}{dt} = 0$ (2)

The highlighted terms in (1) and (2) are equal thus we have <E>= constant (d<E>/dt=0) in closed system(in other words, when Ei is constant).

In time dependent system(not necessarily closed),

setting $<E> = \frac{<\psi|\hat{H}|\psi>}{(<\psi|\psi>)} = \Sigma\|pi\|*Ei = \Sigma\|ai\|^2*Ei/\Sigma\|ai\|^2$ for whatever

value of Ei(t) is ,thus the coefficients $\|ai(t)\|^2/\Sigma\|ai\|^2 = \|pi(t)\|$,

By normalizing $|\psi>$ (and $|\psi i>$) , we get $<\boldsymbol{\psi}|\boldsymbol{\psi}> = \Sigma \|ai\|^2 = 1$; thus

$\|ai(t)\|^2 = \|pi(t)\|$

which mean that the square modulus of ai(t) is the probability density pi(t) of an eigen state to be measured.

thus setting $<E> = \frac{<\psi|\hat{H}|\psi>}{(<\psi|\psi>)}$ lead to $ai^2 = pi$ in all systems and $<E> =$

constant in closed system.

Now lets derive shrodinger equation:

we know by definition that $|\hat{H}|\psi i> = Ei * |\psi i>$;

We are interested in unitary eigen basis of $|\psi>$; thus $<\psi i|\psi i> = 1$

ψi must be a function of complex space, to be usefull in extracting variable quantities.
thus it can be written as $\psi i = B(x,t) * e^{i(\varphi(x,t))}$;
product $<\psi i|\psi i> =* \psi i.\psi i = B(x,t)^2 = 1$ for all values of x and t
thus $\psi i = e^{i(\varphi(x,t))}$

We know in classical physics that all motion equation behave backward and forward in time in the exact same way. This behavior is called time irreversibility.

as our model of quantum mechanics being a superposition of multiple states of a system, and these states each behave according to classic mechanics as shown earlier, the irreversibility of time we have in the force equations, and thus in all equation of motion in classical mechanics, extend to all the superposition and therefore to ψi irreversibility with time.
because ψi describe the system studied, directly or indirectly.
 Thus observable quantities, like speed, acceleration, energy, momentum, etc..
which have irreversibility with time, extend that irreversibility to ψi
thus, $\psi i(-t) = \psi i(t) \rightarrow e^{i(\varphi(x,-t))} = e^{i(\varphi(x,t))} ==> \varphi(x,-t) = \varphi(x,t)$ (a)

Additionally, similar to classical physics, the system evolves with time, thus each state at time t+dt is an evolution of the state at time t.

Lets call operator $U(\widehat{x,y,z,t})$, the operator describing that evolution.

$\psi i(t+dt)=U(\widehat{x,y,z},t) * \psi i(t)$

we know that $\psi i(t+dt)=e^{i(\varphi(x,t+dt))}$

by maths we can say $\varphi(x, t+dt) = \varphi(x,t) + \frac{d\varphi}{dt}.dt$

which means

$\psi i(t+dt)=e^{i(\varphi(x,t+dt))} = e^{i\left(\varphi(x,t)+\frac{d\varphi}{dt}.dt\right)} = e^{i(\varphi(x,t))} * e^{i\frac{d\varphi}{dt}.dt} = \psi i(t) * e^{i\frac{d\varphi}{dt}.dt}$

Thus the operator U is $e^{i\frac{d\varphi}{dt}.dt}$

Time reversibility also means that U(-t)=1/U(t)

in case of complex number it means the conjugate *U=1/U

$U(-t)=e^{i\frac{d\varphi(-t)}{dt}.dt} = e^{-i\frac{d\varphi(t)}{dt}.dt}$ -->

$\frac{d\varphi(-t)}{dt} = -\frac{d\varphi(-t)}{dt}$ (b)

from (a) we get

$\frac{d\varphi(-t)}{dt} = \frac{d\varphi(t)}{dt}$ (c)

having (b) and (c) the only solution possible is that $\frac{d\varphi(t)}{dt}$ is independent of t.

thus $\frac{d\varphi(t)}{dt} = ki$;

$\varphi(t) = k * t + c$;

c must be =0 because e^ic must be equal 1 (unitarity of the eigen vector)

thus $\boxed{\psi i(t)=e^{i.ki.t}}$

always true regardless if the system is time-dependent or not.

With that form of $\psi i(t)$; we derive $d\psi i(t)/dt$ as $i*k*e^{ikt}$

therefore $d\psi i(t)/dt=ik\psi i(t)$

$\boxed{\widehat{H}|\psi i(t) >= Ei * |\psi i(t) >= -i * Ei * ki * \frac{d|\psi i(t)>}{dt}}$;

time dependent Schrodinger equation on eigen state(applicable for time independent SE also at eigen states)

Classical energy:

$$E = \frac{p^2}{2m} + V(x)$$

this is to be applied on all eigen states at all locations.

to obtain the hamiltonian at TISE, we only need to find which operator to use on ψi to get pi^2/2m +Vi(x)

the operator, without going deep into maths behind it, is

$$\hat{p} = -i\hbar \frac{d}{dx} \qquad \hat{V} = V(x)$$

Therefore:

$$\hat{H} = -\frac{\hbar^2}{2m} \frac{d^2}{dx^2} + V(x)$$

is the Hamiltonian operator applicable on eigen states.
This hamiltonian is linear, because of the left hand side term being independent on time , and same for right hand side.
thus if we apply $\hat{H}|\psi>$ to any vector $|\psi> = a(t)|\psi1> +b(t)|\psi2>$

Then from the equation of Hamiltonian in terms of operators we can say
that $\hat{H}|\psi> = a(t)H|\psi1> +b(t)H|\psi2>$

when we take a quantum state $|\psi>$ from which we can derivate through different operators the different quantities and observables of an actual system,
we know by definition that $|\psi> = \Sigma a_i(t)*|\psi i>$ with ai(t) being a complex number with a square amplitude=probability of $|\psi i>$ as an outcome.

$$H|\psi> = \Sigma ai(t) * H|\psi i> = -i \Sigma ai(t) * Ei * ki * \frac{d|\psi i(t)>}{dt} ;$$

$$\frac{d|\psi>}{dt} = \Sigma(ai(t) * \frac{d|\psi i>}{dt} + \frac{dai(t)}{dt} * |\psi i>) \quad (3);$$

Previouly I derived the probability form as pi(t)=Ai*C^-t for each eigen state with Ai being time-independent
pi(t)=ai^2==> ai=$\sqrt{Ai} * C^{-0.5t}$ (note that ai is already defined as real number)
dai/dt=-0.5*ln(C)*$\sqrt{Ai} * C^{-0.5t}$=-0.5*lnC *ai(t)

(3) becomes $\frac{d|\psi>}{dt} = \Sigma(ai(t) * \frac{d|\psi i>}{dt} - 0.5 * lnC * ai(t) * |\psi i>)$

$$|\psi i> = -\frac{i}{ki} \frac{d|\psi i>}{dt}$$

Thus

$$\frac{d|\psi>}{dt} = \Sigma \left(ai(t) * \frac{d|\psi i>}{dt} + \frac{i}{ki} * 0.5 * lnC * ai(t) * \frac{d|\psi i>}{dt} \right)$$

$$i\hbar\frac{d|\psi>}{dt} = i\hbar\Sigma(1 + \frac{i}{ki} * 0.5 \ln(C))(ai(t) * \frac{d|\psi i>}{dt}) \qquad (4)$$

lets call Z the complex number

$$Z = ih - \frac{0.5*h*\ln(C)}{ki};$$

(4) gives $ih\frac{d|\psi>}{dt} = \Sigma Zi * ai(t) * \frac{d|\psi i>}{dt}$ (5)

We have from what we derived earlier the shrodinger equation of eigen states:

$H|\psi(t)> = -i \Sigma ai(t) * Ei * ki * \frac{d|\psi i(t)>}{dt}$

Lets call Z'= -i*Ei*ki

Then $H|\psi(t)> = \Sigma Z' * ai(t) * \frac{d|\psi i(t)>}{dt}$ *(6)*

Z is constant
Z' by experiments on photoelectric effect, that related energy Ei to frequency w as Ei=h*wi, and knowing that the frequency of any outcome from the eigen wave function have frequency of same frequency of the wave function(not proven here, but it is built in the operators used mathematically)
then wi=-ki=-Ei/h
we obtain Z'= =ih which is also constant with time, and independent of the state number i.

when there is no interaction between objects of the system, the paths of each object will not be under divergence ,as explained in the mechanism suggested by this paper. Thus probability will be conserved as if C=1. that simplified the derivation by making Z=ih=Z'

which make the shrodinger equation $H|\psi(t)> = ih\frac{d|\psi>}{dt}$ in case there are no interaction in the system.

Valid not only for eigen states, but also for any superposition of those.
THUS SHRODINGER EQUATION IS DEMONSTRATED FROM THE LAW OF CONSISTENCY IN MOST GENERAL FORM, AND IN ITS SPECIAL CASES.

Seeing that its all based on superposition of states, why would that superposition effect only appears at nano scale and not on macro scales?
is it interaction with the surrounding?and why it appears classical at macro scales?

first to answer this we must explain how the most general behavior of particles is like:
an object A under influence of object B, becomes in n copies, those copies have effect on external objects and internal ones but non accumulative, in for of what I call "exotic vectors"

We already said that number of copies in total was $N(t+dt)=c*N(t)^2$ for taking into account effect of B on each of the n copies, in particular all effects of B, which contain all copies due to influence on A including the effect of each on each copy

Now in the new model it is $N(t+dt)=c*N(t)^3$ to take into account the influence between the copies which have as nolution $N(t)=B*C^{3^{(3t-1)}}/2$;

Can be written as $N(t)=B'*C''^t$ which is same form as previously derived cases.
The interaction between copies wasn't introduced in probability form derivation just for sake of simplicity, knowing that it results in the same form of formula $N=A*C^t$

Now why decoherence happens:

We know now that interaction between copies is valid, but as exotic vectors that do not accumulate or add up.
However, entanglement between two copies is meaningless, because on the outcome only one copy will appear, as already explained earlier.
so if an external particle B interact with the system of copies,
we will get entanglement between B and each copy of A, because one of those copies on observation will appear, and the particle B also will appear.
due to this entanglement the probability of getting B with a certain

exotic vector, equals the probability of finding A1 or A2 or …Ai,…An, with opposite and equal exotic vectors.

To simplify, lets consider two copies of A(blue) and the particle B
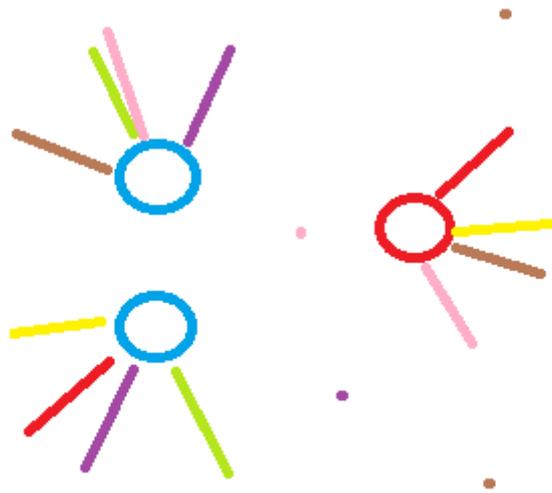
Because the particle B is necessary in outcome, its exotic vectors produced by the particles of A are dominant.those are colored in red yellow,brown and pink in the picture above.
the corresponding effect, which represent the entanglement, are also represented with the same color.Therefore at measurement one color direction will appear on A1 or A2 and B.
this fact, rules out the green and purple outcomes ,which represent the interaction between the copies themselves.
Thus, we obtain removal of interaction between copies due to entanglement with a original particle.
In the double slit experiment, the particle ejected enter the slits, and the wave-like superposition continue to exist. However, the slits divide the beam into two.these two beams are formed by copies of the particle evolving in time.the beam intersects, and the copies interact with each other in the intersection, leading to interference, detected on the screen by interference pattern.
Once a particle entangles with the copies, the influence between the copies is eliminated. And this remove the interference pattern.
Nonetheless, the beam of superposed copies still evolves as superposition but like a beam of particles instead of a beam of wave.

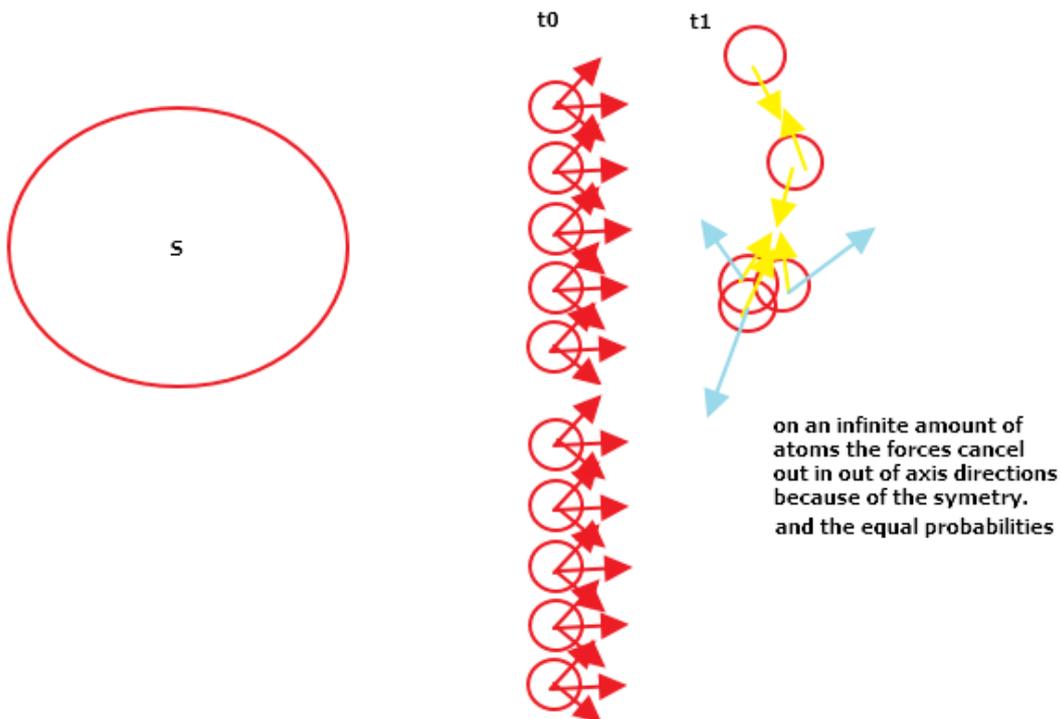This is what decoherence is all about.

However on the large scale, decoherence remove interference between objects as waves, but it is not enough to explain why outcome is obtained as classical mechanics.

this phenomenon I will call: the global decoherence, and it consists as the following:

the effect of quantum mechanics is not visible at larger scale for the following reason:

if the force acts on a macroscopic object, each of the particles of the object is subject to the virtual forces, but once it is under a consciousness field the timelines of each particle collapses. However, even in their virtual time lines, that bond between the atoms, holding them together, resisting deformation, will exist, this led to the fact that the particles will move together to keep the shape non-deformed, but they will tend to a direction more than the other depending on how each particle adopted a virtual force more than the other.

When applied on a huge number of particles, the resulting forces, which are made by the bond between the atoms, will be toward a specific direction as much as they are toward a symmetrical direction around the axis that join the centers of the objects. This lead to significantly higher probability of resultant force applied on the axis joining the objects than toward any other direction, thus we obtain the classical mechanics behavior.

on an infinite amount of atoms the forces cancel out in out of axis directions because of the symetry. and the equal probabilities

Therefore what we conclude is that, the most general way of affecting position, mathematically, is what nature does, appearing as quantum mechanics, and at a higher scale, the same thing is happening but because it is applied on a huge number of particles it behaves like it is impossible to be at many locations at one→classical mechanic.

Till now, we derived Schrodinger equation and entanglement using only maths and consistency theory.

shrodinger equation is too broad to resolve the system by specifying the way that particles and their copies evolve like we do in classical mechanics,because each influence of a copy and interference are too complex to be resolved by simple calculation.
However, nature by following consistency principle, limits the behaviour, and thus narrow the possibilities by imposing correlations between different elements of the systems.

when viewing a system of two or more particles, we know that if for example we have a particle A and B with exactly the same property(identical), we will get the following characteristics,by the mere fact that time evolution is related to copies which are not measured, thus make a phenomena a physical outcome of multiple abstract explanation, and by consistency theorem, any effects that can be derived from those abstract explanations must applies on the real physical outcome.
Briefly, at measurement we get what described in the following diagram:
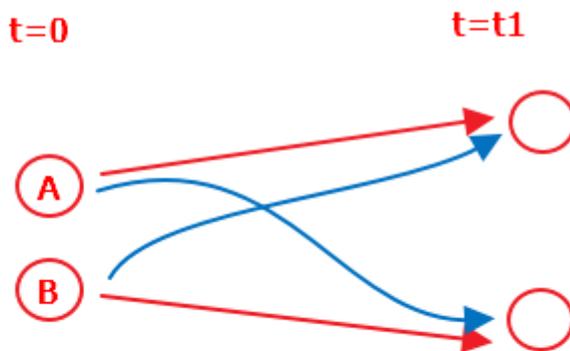
in reality we have at t=0 and t=t0 two indistinguishable particles.
A and B have two ways to get to the results of t=t1
(blue and red)

the final outcome could be interpreted in two ways, motion according to red or blue.so in other words even if A moved along blue path, it also seems to have moved in the red path, and due to this similarity the rules for motion in red path should apply also to A due to law of consistency

this indistinguishability yield that the wave function of the system should be in a way, the real outcome like probability $|\psi(a,b)|^2=|\psi(b,a)|^2$ always respected because

both red and blue paths should happen simultaneously.
This lead to $\psi(a,b)=+\psi(b,a)$ which happens to be the case of bosons
and $\psi(a,b)=-\psi(b,a)$ which happens to be the case of fermions.
the latter correlation by itself is enough to prove the Pauli's exclusion principle
which imposes a fixed number of particles that cannot be exceeded in each orbital
of an atom:

$\psi(a,b)$; if a and b are independent(which is valid assumption for non-entangled
particles), is $\psi(a)*\psi(b)=\psi(b)*\psi(a)=\psi(b,a)$, this ok for bosons, but for fermions it is
absurd unless $\psi(a,b)=0$ which mean impossible to exist in such a state.
What we conclude from this is that it is impossible of 2 identical fermions in the
same system(note that entangled fermions are automatically considered
distinguishable by their opposite behaviors described earlier)

This means, that two indistinguishable particle(same properties) in same
system(because it have to be possible to switch positions theoretically), cannot
exist at the same time.

Concerning quantization of energy:
the resolution of the Schrodinger equation leave by applying boundary
conditions(known values of ψ at certain boundaries) yield to having sin and cosine
functions equated to constants.thus to resolve this, we obtain only discrete
values(for e.g $2n\pi$ -->E as a function of n-->discrete and quantized.

**Thus most if not all of chemistry can be derived from Pauli Exclusion +
Quantization in resolution of SE, which both are natural result of application
of consistency law+maths.**

Quantum Field Theory:

The shrodinger equation we have till now describe any system.However the
Hamiltonian usually used to determine mechanics of the particles, can be extended
to take into account the rest mass energy derived by relativity(see next section)

by relativity we get $E^2=(mc^2)^2+p*c^2$
we have from shrodinger: $H|\psi>=E|\psi>$
using both, by focusing on type of outcome interested in and how the equation
leading to it must be for those cases, dirac , using spinors of different sizes, the
relativistic equations of shrodinger can be written for each, and helped describe
each particle type.
thus we obtain quantum field theory which at least shows 4 type of equations:0
spin, spin ½, spin 1,spin 2.

Thus we can say quantum field theory is also rooted in consistency as it is just
about particular solutions of the TDSE.

4. Relativity:

<u>Special relativity:</u>

Special relativity also can be derived from the fact of non –infinite speed limit of the cosmos combined with the theory of consistency as follows:

can we consider time as 4th space dimension parameter? lets see.

this flat paper represent a space with 2D, therefore the eye ball is a 2D object and not as the real eye ball.what it receives from the light emitted by the star is an image in form of line➔1D image.
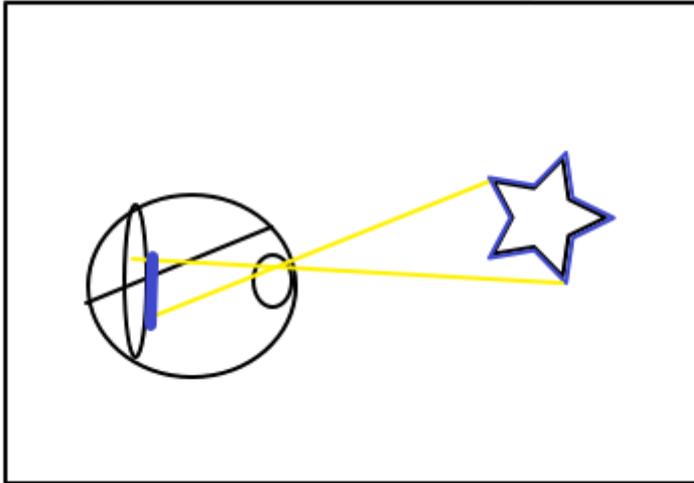
lets suppose now that there is 3D object emitting light in all directions, including the in plan direction of the 2D world we created.
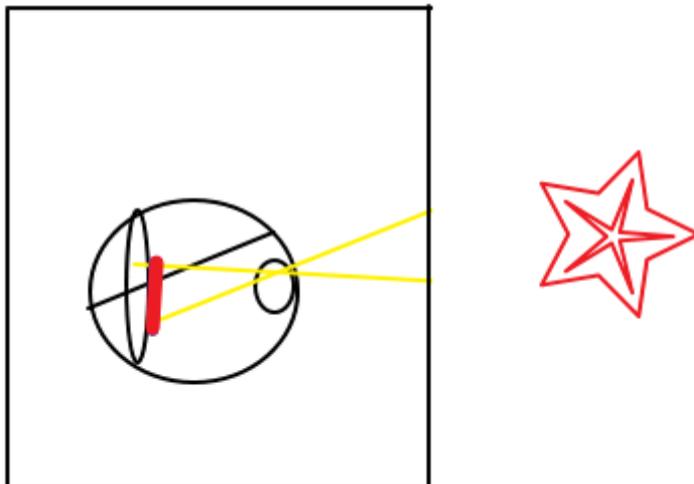
The only light that arrive to the eye ball is the light in plane with our 2D world. Now lets suppose that this 3D star,have a variable shape in space(like a pyramidal star for example)

and we move the paper/2D world orthogonally to its plane, what will the eye ball see?

It will not comprehend the shape of the 3D star but it will perceive a variation in the red line it sees.

Extrapolating this to 3D world, an eye ball having 3D shape will perceive a 2D image of a 3D object, and a 2D image of a 4D object, but what happens is that when the relative 3D world(for e.g our physical presence) starts to move

orthogonally to itself in 4D , the 3D eye ball will perceive variation of the image emitted by the 4D object, without seeing the 4D object at once, and that will be an exact phenomena as that of considering 3D world eye ball and 3D object with time parameter added instead of 4th spatial dimension. Being totally similar, according to the theory of consistency(axiom 2), both must apply their rules simultaneously. There are no mathematical rules that time **should** obey, but when we consider time as being an illusion of our motion in 4th spatial dimension, we have obvious rules which should be respected due to theory of consistency.

we can describe motion and distances in the following simplified diagram:
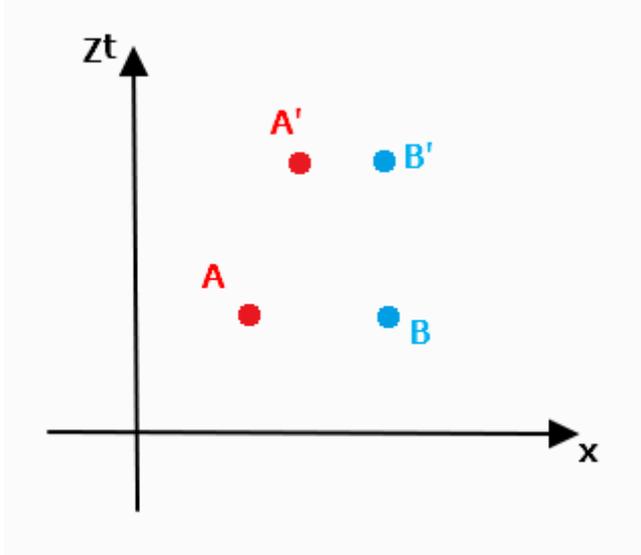
with Z being an unknown speed of motion in the 4th spatial dimension, A and B being objects in the 3D world, and A' and B' being the same objects at a different 4th dimension position(or in other words other time)

we will call it consciousness index the point of reference that experience time(it cannot be our body without leaving a copy, because it would become invisible to others with relative motion as we see in special relativity, and it cannot be a bloc 4D body because we experience variation which means the index is local) lets suppose that "a" at point A is a person and "b" at point B is another person. To move from A to A', relatively to "a" it would take the speed of consciousness index, v_c multiplied by the time measured by "a" to arrive to A'.lets call it $v_c*\Delta T_0$.If we suppose B is steady in 3D space, and only moves in the fourth dimension, then the distance traveled by b from B to B' is the speed of consciousness index, v_c We naturally assume from the theory of consistency that the velocity of consciousness index is the same for all persons(they feel time in the same way).If we do so this mean that the speed of consciousness index of b is same as that of a and equals v_c.

the distance in the 3D space that "a" travels from A to A' is u* ΔT. with u being

the speed of A relatively to B in the 3D spatial dimensions. Knowing these info we apply Pythagoras theorem as follows:

$AA' = V_c * \Delta T_0$; $AA'' = U * \Delta T$, $A''A' = Vc * \Delta T$

$AA'^2 = AA''^2 + A''A'^2$

→ $(V_c * \Delta T_0)^2 = (U * \Delta T)^2 + (V_c * \Delta T)^2$

→ rearranging the terms we obtain:

$Vc^2 * (\Delta T_0 / \Delta T)^2 = U^2 + Vc^2$

→ $Vc^2[1 - (\Delta T_0 / \Delta T)^2] = U^2$

→ $1 - (\Delta T_0 / \Delta T)^2 = U^2 / Vc^2$ → $(\Delta T_0 / \Delta T)^2 = 1 - U^2 / Vc^2$

$$\Rightarrow \left(\frac{\Delta T0}{\Delta T}\right) = \sqrt{1 - (U^2/Vc^2)}$$

the cosmos must limit the speed in the 3D spatial world to Vc to not obtain complex numbers which cause incomprehensible time dilation for our consciousness. Therefore, always u<Vc.

Vc is the speed of consciousness index.

It is either finite or infinite. If it is infinite then we should perceive the whole-time line instantly. And time being infinite as we have said already in chapter 1, then to comprehend all timeline instantly we should be infinite beings which is not our capacity. Therefore consciousness index speed must be finite for us.

the maximum speed we can attain in the 3D universe is the speed of a massless object, which is measured in the universe as c, the celerity of light.

$$\Rightarrow \left(\frac{\Delta T0}{\Delta T}\right) = \sqrt{1 - (U^2/c^2)}$$

Therefore we obtain the special relativity formula, which is derived solely from the theory of consistency.
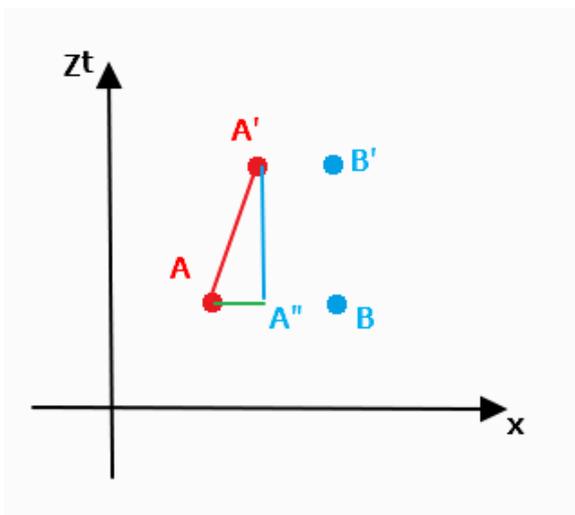
$$\text{lets call } Y = \sqrt{1 - (U^2/c^2)}$$

Consistency is enough to lead also for E=mc^2, knowing that light energy is proportional to its frequency, and here is the thought experiment of Albert Einstein that shows this:

Imagine an atom stationary, in reference frame R at rest.
initial momentum of this atom is p=m*v=0
the atom emits two photons in opposite directionin reference R, the momentum is zero still, as the rays are symmetrical.

Now imagine instead seeing the same event from reference frame R' moving at velocity v to the left.
the atom now have a momentum in R' p= m*v
then the atom emits in all direction the radiation. The momentum in direction of motion , due to doppler effect, is not symmetrical in this reference R', which creates a momentum difference between left and right.this momentum difference is Δp, thus the total momentum becomes p=m*v+Δp   (a)
but momentum should be conserved as there are no external force.Therefore the term m*v in (a) must vary before and after emission.
v in R was not modified, v in R' cannot therefore be modified, because
for e.g for low velocities,v'=v+u where v and v' are the velocity in R and R' respectively and u is the reference R' velocity relatively to R, and thus Δv'=Δv=0.

This means that the only term that can change in (a) is m—call it m'
p=m'v+Δp   (b) and p=mv   (c)
(b)-(c)=v(m'-m)+Δp=0
Δm=-Δp/v
-Δp=pleft+pright

the variation in momentum of each photon according to doppler effect (which is actually a mathematical observation) is as follows:

$$p = p_0 \sqrt{\frac{1-\beta}{1+\beta}} \qquad \beta = \frac{v}{c}$$

$$pleft = -p0 * \sqrt{\frac{1 - \frac{v}{c}}{1 + \frac{v}{c}}} \; ; \; pright = p0 * \sqrt{\frac{1 + \frac{v}{c}}{1 - \frac{v}{c}}}$$

$$pleft + pright = p0 \left(\sqrt{\frac{1 + \frac{v}{c}}{1 - \frac{v}{c}}} - \sqrt{\frac{1 - \frac{v}{c}}{1 + \frac{v}{c}}} \right)$$

$$= p0\left(\left(1 + \frac{v}{c}\right) - \left(1 - \frac{v}{c}\right)\right)/\sqrt{(1 - v^2/c^2}$$

$$\Delta p = \frac{p0\left(\frac{2v}{c}\right)}{\sqrt{\left(1 - \frac{v^2}{c^2}\right)}}$$

$$\Delta m = \frac{p0\left(\frac{2}{c}\right)}{\sqrt{\left(1 - \frac{v^2}{c^2}\right)}}$$

$for\ photons\ p0 = \frac{E0}{c}; therefore$

$$\Delta m = \frac{2E0}{c^2}(1/\Upsilon)$$

E0 is the energy of one photon, 2E0 is the energy of two photons
total energy emitted =E=2E0
therefore $E = \Upsilon \Delta m * c^2$

By defining M'=MΥ as the relativistic mass, we get

E=M'c²

General Relativity:

General Relativity ,Initiated by Einstein, by identifying the exact physical outome of gravity, and an accelerated frame.
this is an evident use of law of consistency(axiom 2)
In details, the phenomenon of gravity, as a field of acceleration effects, is described in flat space time as curved trajectories.
the exact same effect could be attributed to distortion in space-time curvature. according to axiom 2, sharing both abstract explanations, the gravity should obey laws of spacetime curvature.

Can this be applied to electric forces?
if we suppose we have a source of attractive charge. relatively to the charged particles affected by its attraction, their motion are curve trajectories in flat space time.Now the problem if I consider them caused by curvature of space-time instead, they should be consistent with curvature of space-time that are caused by gravity.IN other words gravity should also create a electrostatic force and there should be no neutral charge objects.which is impossible.therefore there is no equivalence between curved space-time, and curved trajectories due to electric force in flat space-time.

Dark energy, is the result of the GR equation, as cosmological constant(energy per cubic length of space as property of space itself)

Einstein Field Equation (in tensor form):

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{c^4}T_{\mu\nu}$$

Breakdown of Terms:

- $R_{\mu\nu}$: Ricci curvature tensor – describes the degree to which spacetime is curved.
- R: Ricci scalar – a scalar derived from the Ricci tensor, representing curvature.
- $g_{\mu\nu}$: Metric tensor – describes the geometry of s ↓ etime.
- Λ: Cosmological constant – represents the energy density of the vacuum (dark energy).

This paper don't require diving into derivations of this formula, but rather just the axiom mentioned previously.

5. Anticipated Questions and Objections:

1. <u>Is consciousness truly necessary to explain wave function collapse?</u>
2. <u>Does the theory imply determinism or randomness in outcomes?</u>
3. <u>How indistinguishability is defined in the frame work of this theory?and how is it in relation to consciousness in the two axioms</u>
4. <u>What differentiate the theory from the many world</u>
5. <u>Can the theory of consistency/interpretation of the quantum mechanics be tested?</u>

<u>Answers:</u>

1. In the theory of consistency, consciousness do not collapse the wave function. The mechanism of collapse is simply the result of the physical part of us being transformed into many copies. This physical part, mainly our brain, contain in itself its individuality and identity, which makes us part of one of the copies at a time and not all simultaneously. the copies as derived from consistency application, have its effects un-additive(otherwise it would reduce to classical), but spreading(creates different copies to conserve symmetries), leading to numerous signals that do not interfere while hitting the brain each. the brain being a physical object, it will also react to each signal as an effect, without being additive. This means that the brain will experience the existence of one copy only.
that reduction from the multiple copies to one single copy is observed as "wave function collapse".

2. The theory implies determinism and randomness at the same time.
the theory shows that at the objective reality, everything happens symmetrically and deterministically in that sense, undergoing all processes under the determined classical physics.
however, the subjective experience as individual copy state, perceive one side of the reality. And which side it chooses must happen arbitrarily, with a certain probability distribution.

this randomness looks like violating the first axiom that says:
"Indistinguishable circumstances must yield identical outcomes"
but in reality, when our awareness becomes an element of the circumstances, we must point out that two consciousnesses cannot be neither be distinguished nor commonized. This makes the

indistinguishability circumstances out of the scope of this axiom.

It is natural to ask, how do I know if ever two circumstances are distinguished? And then what is the use of the first axiom? Could consciousness have effect on everything?

Consciousness cannot be an element that affect distinguishability, thus in context of the axioms, the outcome is independent of consciousness. However, the key feature of the axioms is that outcome can be distinguishable, but it must be identical, which is respected in the model described in this paper.

3. In the framework of this theory, indistinguishability is not equal to identicality. But instead in the ability to distinguish. Not the ability of consciousness (which will be problematic if no conscious observer is there) but the ability as in sense of possibility.
therefore indistinguishability=ability to be distinguished.

4. Here are key differences between what my theory of consistency, and the many world theory offers:
    a. <u>Deterministic Interaction as Source of Superposition:</u>
       While MWI assumes that all outcomes of a quantum event exist in parallel branches, my theory attributes the superposition to an underlying deterministic mechanism: interaction affecting position
       in the most general sense, respecting symmetry of the system by consistency. The root of superposition is therefore the normal forces of nature(e.g electric, gravitational etc.)
    b. <u>Objective Probability Distribution from Physical Constants:</u>
       Instead of relying on the Born rule as a postulate (as MWI does), my theory explains probability distributions—like the $\cos(\theta)$ correlation in Bell-type experiments—as arising from fundamental constant distribution, acting as a time evolution operation, inherent to the nature of each force or interaction

    c. connect interaction more directly to the creation of entanglement, potentially offering a physical reason why entanglement occurs, which MWI lacks

    d. <u>Collapse as Selection, Not Splitting</u>: the collapse of the wavefunction is not a real event, nor a split—it's a subjective selection,outcome of "individuality", of one of the "copies" of brain that are produced from the interaction/forces which must be produced due to interaction There is no need for an observer or many-worlds to explain it.

    e. better intuitive and more foundational understanding of, quantum evolution, entanglement, interference and decoherence.

5. Testable ways of the theory in general.

Will be provided along with this paper on the publishing journal.

6. Conclusion

This paper has proposed that the fundamental behaviors observed in classical and quantum physics, as well as relativistic phenomena, can all be derived from a single foundational principle: the *law of consistency*. By applying this law to systems of interacting causes, we demonstrated how the superposition principle, Newtonian mechanics, and key aspects of quantum mechanics naturally emerge. We also showed how scaling arguments and symmetry considerations lead to the linearity of motion effects and explain the directional behavior of physical interactions.

Moreover, by applying the law of consistency to force derivations, we explored how both gravitational and electrostatic laws can be formulated from consistent principles, with appropriate conventions and mathematical structures. This framework not only offers a coherent view of physical laws but also suggests that quantum behavior may be a superposition of classical interactions, offering a testable hypothesis about the roots of quantum phenomena.

Ultimately, this work presents consistency not as a mere constraint on physical systems, but as the very engine through which the universe expresses its laws — simple, scalable, and unified.

Author's Note:

This work has benefited from the assistance of AI-based tools for improving clarity, grammar, and phrasing. All scientific ideas, theoretical developments, and conclusions presented are entirely my own. The use of AI was limited to language refinement to ensure that the concepts are communicated more effectively and precisely.